

U.S. Treasury department

SPECIAL REPORT

TO THE

SECRETARY OF THE TREASURY

BY

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SPECIAL AGENT, TREASURY DEPARTMENT,

SHOWING

THE PRODUCTION OF TIN AND TERNE PLATES IN THE UNITED STATES DURING THE FISCAL YEAR ENDED JUNE 30, 1892, AND THE PRESENT CONDITION OF THE INDUSTRY; ALSO CONTAINING A BRIEF STATEMENT RELATIVE TO THE PRODUCTION AND DEVELOPMENT OF THE TIN MINES OF THE UNITED STATES.

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TIN AND TERNE PLATES.

OFFICE SPECIAL AGENT, TREASURY DEPARTMENT,
402 Washington street, New York, August 15, 1892.

SIR: Respectfully referring to Department's telegram dated July 26, 1892, I have the honor to submit herewith a special report showing the production of tin and terne plates in the United States during the fiscal year ended June 30, 1892, and the present condition of the industry.

I also submit a brief statement relative to the production and development of the tin mines of the United States.

The figures presented are taken from the sworn statements of manufacturers, which are now complete for the year, as relates to the production of tin and terne plates.

These statements will be filed with my regular annual report, as soon as the returns of imports and exports, and of manufactures of American sheet iron or steel made into articles and wares tinned or terne-coated, have been received in due form.

With respect to these last-named returns, the data which I have already obtained is so nearly complete, that it may be safely accepted for the purpose of this report.

THE YEAR'S PRODUCTION.

The production of tin and terne plates by quarters, for the fiscal year ended June 30, 1892, is shown in the abstracts appended hereto, marked Exhibits 1, 2, 3, and 4. These abstracts furnish the names and location of manufacturing firms or companies, and are not open to further revision, for the reason, as before stated, that they now include the sworn statements of manufacturers for each quarter of the year complete. Summary statements of production are also appended, Exhibits 5 and 6.

From Exhibit 6 it is seen that the total production of tin and terne plates proper for the year, by quarters, was as follows:

Quarter ending—	Pounds. [†]
September 30, 1891.....	826, 922
December 31, 1891	1, 409, 821
March 31, 1892.....	3, 209, 225
June 30, 1892	8, 200, 751

Total production for the year 13, 646, 719

Besides the foregoing it should be stated, further, that the production of American sheet iron or steel, made into articles and wares, tinned or terne-coated during the year, as shown by the sworn statements of manufacturers received to date, was 4,828,228 pounds.

As these manufactures constitute tin and terne plates within the meaning of the law, it now seems probable that when full returns of the same are received the total production for the year, inclusive of such manufactures, will not fall much short of 20,000,000 pounds.

IMPORTS AND EXPORTS.

The quantity of tin plates and terne plates imported on and after July 1, 1891, and entered for immediate consumption on arrival, or withdrawn from warehouse for consumption during the year, was approximately as shown below:

	Lighter than 63 pounds per 100 square feet	63 pounds per 100 square feet and heavier.	Total.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
Tin plates.....	329, 571, 603	14, 406, 441	343, 978, 044
Terne plates	41, 733, 267	1, 293, 689	43, 026, 956
Total.....	371, 304, 870	15, 700, 130	387, 005, 000

The quantity of tin plates and terne plates on which duties were paid, and which were used in the manufacture of articles exported with benefit of drawback, during the fiscal year, was approximately as follows:

	Lighter than 63 pounds per 100 square feet.	63 pounds per 100 square feet and heavier.	Total.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
Tin plates.....	119, 432, 264	477, 423	119, 909, 687
Terne plates	18, 239	157	18, 396
Total.....	119, 450, 503	477, 580	119, 928, 083

From the foregoing it is seen that of the class of plates weighing lighter than 63 pounds per 100 square feet, there were:

	<i>Pounds.</i>
Total imports for the year	371, 304, 870
Total exports for the year	119, 450, 503
Net imports	251, 854, 367
One-third of which is	83, 951, 456
Or in round numbers	84, 000, 000

Under the provisions of paragraph 143 of the act dated October 1, 1890, American manufacturers must produce during one of the six fiscal years ending June 30, 1897, a quantity of tin and terne plates lighter in weight than 63 pounds per 100 square feet, which shall equal one-third of the net importations of the same class of plates during one of the said years; otherwise it is provided that on and after October 1, 1897, all such plates shall be admitted free of duty. It is understood that under the law the year of largest production may be compared with the year of smallest net importations.

If now it be assumed that the net importations of the past fiscal year will prove as small as any that will occur during any one of the six years named in the act, it will follow that one-third of the said net importations as hereinbefore shown, or in round numbers \$4,000,000 pounds, is the amount which American manufacturers have to produce during one of the said years in order to meet what may be termed the one-third requirement relative to production as provided in the law.

That American manufacturers will meet this requirement during the present fiscal year is scarcely open to question.

It has been shown that during the past year the total production

under the law closely approximates 20,000,000 pounds. I see no reason for changing the view expressed in my report of April 26, 1892, that the production of the present fiscal year will be in excess of 100,000,000 pounds.

In that report I estimated the production of tin and terne plates for the fiscal year just ended at 10,000,000 pounds; but it has been seen that the actual production exceeded that estimate by more than three and one-half million pounds. Of the production of tin and terne plates during the past fiscal year, a little more than 90 per cent was of the lighter class of plates named in the law, which alone are subject to comparison with the same class of plates imported. If practically the same ratio of weight between the lighter and the heavier class of plates should be maintained during the present fiscal year, as presumably it will be, there would result upon the foregoing estimate a production of 90,000,000 pounds, weighing lighter than 63 pounds per 100 square feet, or an excess of 6,000,000 pounds over the required amount. These figures have reference to tin and terne plates only. I may here state that the rapid growth of the industry since the date of my former report fully justifies the prediction therein contained, that by the close of the present fiscal year the production will be at the annual rate of 200,000,000 pounds.

PRODUCTION OF AMERICAN BLACK PLATES.

A careful estimate shows that the quantity of black plates produced in the United States, and which entered into the manufacture of tin and terne plates during the year was, by quarters, as follows:

Quarter ending—	Pounds.
September 30, 1891.....	785, 547
December 31, 1891.....	1, 200, 661
March 31, 1892.....	2, 132, 082
June 30, 1892.....	5, 178, 263
Total.....	9, 296, 553
To which add black plates sold to stamping companies, made into articles and wares, and tinned or terne-coated as per returns to date.....	4, 828, 228
Aggregate.....	14, 124, 781

In other words of the production of tin and terne plates proper for the year over 68 per cent, and of the total production over 70 per cent were made from American black plates. Further inspection shows that the quarterly increase in the production of black plates has been in about the same ratio as that of tin and terne plates. The preparations that are going forward for the production of black plates, by American manufacturers, justifies the belief that this rate of increase will be maintained.

A further examination of the figures presented in the abstracts shows that the production of tin and terne plates during the fourth quarter of the year was more than two and one-half times greater than that of the previous quarter, and was about three-fifths of the entire production for the year. Of the total amount of 13,646,719 pounds of tin and terne plates produced during the year, 4,539,590 pounds, or about one-third of the whole, consisted of bright tin plates, and of this amount 4,132,009 pounds, or more than 90 per cent was of the class of plates weighing lighter than 63 pounds per 100 square feet.

During the fourth quarter of the year the production of bright tin plates, as compared with the first quarter, was in the ratio of more

than 20 to 1, while that of terne plates was in the ratio of less than 8 to 1. Taking the four quarters together the production more than doubled with each quarter.

During the first quarter of the fiscal year five firms were engaged in the manufacture of tin and terne plates, eleven during the second, twenty during the third, and twenty-six during the fourth. The probability is that at least eight new names will be added to the list of manufacturers at the end of the present quarter.

Since my report of April 26, 1892, I have visited officially, under Department instructions, most of the tin-plate manufactories of the country, with a view to ascertain as nearly as practicable the exact condition of the industry by personal inquiry and observation. The results of my observations were duly submitted in special reports to the Department, to which reference is hereby made for details of information too extended for this report.

During the past quarter the Keystone Tin Plate Company, of Philadelphia, Pa., which had a small plant, suspended after a few weeks of production, owing to difficulties of a personal nature. I am informed that they are liable to resume under the same name, but with a different management.

The firm of William T. Simpson & Co., of Cincinnati, Ohio, which has been among the list of manufacturers, but whose production has been inconsiderable, furnished no returns during the past quarter. They inform me that what little they have done has been simply by way of experiment. The Lewiston Tin Plate Works of Joliet, Ill., which began the erection of a complete plant, to include the manufacture of black plates, have suspended their building operations for want of the necessary capital to proceed. I am informed that a defective land title will probably prevent the work being resumed.

The Anderson Tin Plate Company, of Anderson, Ind., began building about one year ago without experience or the necessary capital, and for some months their operations were experimental. The company ran behind in their finances, and a few days ago a forced sale was made to satisfy a judgment of about \$300, the owners having a year in which to redeem their property. The company have been operating a 5-roll Morewood tinning machine, and when I was there June 21, 1892, they were putting in an Edwards' machine, which was expected to be ready for work about July 1, 1892. The plates produced by this firm have found ready sale, being of excellent quality. The firm are now making an effort to adjust their financial affairs, the intention being to continue the work of production as heretofore, but on a larger scale. A new and substantial wooden structure, directly on the main line of railroad, furnishes ample room for the operations proposed.

The McKinley Tin Plate Company, of Pittsburg, Pa., which were reported to have gone out of business, reorganized under the same name, and have erected a substantial plant at Wilkinsburg, Pa., which they expect soon to enlarge.

Within the past few months four firms have suffered from fire. As this seems not to have been fully understood, and hence to have been the subject of some unfavorable comment, it seems proper briefly to present the facts, which are as follows:

1. In March, 1892, the N. & G. Taylor Company, of Philadelphia, Pa., which occupied temporarily, and for experimental purposes, a rented building, were burned out.

During the last three months the firm have been engaged erecting large and substantial works of brick and iron on Tasker street, in Phila-

delphia, near the Delaware River. These works are bounded on two sides by the tracks of the Pennsylvania Central and the Baltimore and Ohio Railroads, and on the third side by the "Belt Line," which is projected to connect with all trunk lines running into Philadelphia. At the time of my visit to their new works, made July 23, 1892, the walls of all their buildings were found to be completed, and on some of the buildings the roofs were nearly finished. On the tinning house which is 50 by 305 feet in length, and which is built with chimneys and places for 23 tinning stacks, the iron trusses were being placed for the roof.

The foundations for two tinning machines were being laid, and the expectation of the firm was that they would be engaged in the actual work of production by August 20, 1892. The estimated yearly capacity of the plant when finished is over 30,000,000 pounds.

2. On the 12th of May, 1892, the Pittsburg Tin Plate Works, of New Kensington, Pa., were destroyed by fire. On the 11th of July following the firm had nearly completed a fine steel building, in which they proposed to operate three tinning stacks instead of two, as before. On the date last named they hoped to be in operation August 1, 1892.

3. The firm of Coates & Co., of Baltimore, Md., lost a portion of their works by fire in June, 1892. On the occasion of my last visit to their place, July 22, 1892, the work of reconstruction was going rapidly forward. The machinery of their rolling mills was in motion and under a temporary shelter, the cold rolls were in operation on the black plates, as were also the annealing furnace, the pickling department, etc. Arrangements had been perfected for starting their tinning plant which had not been injured by the fire, on Monday the 25th of the same month. The firm were at that time maturing plans for enlarging their works to double the capacity before the fire.

4. The remaining firm was the St. Louis Stamping Company, of St. Louis, Mo. On the night of July 4, 1892, this firm had a fire in their tinning house, which practically did no further damage than to burn out the roof and the dependent shafting, together with the hoods, etc., over the tinning kettles.

When the fire occurred eleven stacks were in operation. Repairs were hastily made, and on July 21, 1892, six out of the eleven tinning stacks were running. The remainder it was expected would be in operation by the end of that week.

When in St. Louis, on June 20, 1892, this firm were putting down foundations of the most substantial character for ten additional stands of cold rolls, when their twelve stands of hot rolls, making six hot mills complete, were to be put solely upon black plates.

To this work of enlargement six additional tinning stacks were being built, making sixteen in all. The firm expected that the whole would be completed ready for operation by September 1, 1892.

With respect to the origin of these fires, it may be stated, in general, that they were due to the inflammable nature of oils used, and in part, probably, to want of experience in guarding against accidents on this account.

I may mention in this connection that recently several strong firms have entered the list as producers, and are now erecting works which, during the next twelve months, will call for an investment in buildings and plant probably of \$250,000 each.

Among these are the firm of Hughes & Patterson, of Philadelphia, Pa., who have large rolling mills on the Delaware, and who are now putting up extensive and substantial brick and iron structures for the rolling

of black plates, as well as for every department of tin-plate manufacture. The foundations of these buildings were in process of construction when I was there, July 23, 1892.

At Elizabethport, N. J., the firm of E. Morewood & Co., of Llanelly and Swansea, Wales, are erecting large and substantial works of brick and iron, the estimated capacity of which will be from 20,000,000 to 25,000,000 pounds yearly, working two turns, which is the purpose. The company, which will be known as the Morewood Tin Plate Manufacturing Company, expect to begin the work of actual manufacture about October 1, 1892. For the present they will use black plates made at their own works in Wales. The works at Elizabethport will be enlarged within the year, either by doubling the tinning capacity, or by the erection of the necessary rolling mills to supply the black plates to the works now building.

Three acres of land have been purchased directly on tide water, and the railroad company is making connection direct to the works.

At Gas City, Ind., which is in the natural-gas section of the State, the same firm are now erecting tinning works under the name of E. Morewood & Co., the building of which is as far advanced, and will have the same capacity, as the works at Elizabethport. Here the firm have 52 acres of land, and will within the present year erect a 4-mill plant with all the necessary appliances for the manufacture of black plates.

This plant the firm propose steadily to enlarge until a 20-mill plant is in operation. Siemens-Martin open-hearth furnaces will convert the pig iron into steel, from which it is cast into ingots, and is thence carried through the various processes of manufacture into steel billets, bars, sheets, and black plates, ready for tinning.

The plans propose an investment in rolling mills and tinning plant, when completed, of \$1,000,000. The yearly capacity of this plant when in full operation is estimated at from 58,000,000 to 60,000,000 pounds.

On a visit to the works at Elizabethport a few days since, I met Mr. Charles M. Stuart, who is a gentleman of much intelligence and has charge of the business in the absence of Mr. J. H. Rogers, the managing partner of the firm in Wales. Mr. Rogers is among the largest and most influential of the Welsh manufacturers, having been for some years chairman of the Tin Plate Manufacturers' Association of Wales. The firm have ample capital to enable them to carry forward successfully the work they have undertaken.

I was informed that it has been fully determined that the foremen only shall be from Wales, and that Americans will be employed in the various other departments of labor.

Other large firms referred to in my former report are about ready to begin manufacture, or are pushing the work of preparation. In some cases unlooked-for hindrances have occurred, as was to have been expected, and the work of actual production has been delayed.

I may here refer to the Somerton Tin Plate Works, of Brooklyn, N. Y., which are now about ready to start, and the mills of which will probably be turning out the metal sheets during the present month. In visiting these works some weeks since, Mr. Rogers, whose name has been previously mentioned, expressed his astonishment at finding so complete a plant.

From the statement of an English paper, Mr. Rogers is understood to have referred to this plant, on his return to Wales, as the "finest he had ever seen." He also, as is reported, spoke of an "enormous steel and tin-plate concern" that was being built in Chicago, by which he is understood to have referred to the Corning Steel Company of that city.

In calling at the office of this company in Chicago, June 17, 1892, I met the president, Mr. Charles S. Corning, who furnished me with the following statement of facts relative to their present and prospective operations.

Mr. Corning stated that the company was organized in January, 1892, under the laws of Illinois, for the purpose of engaging in the manufacture of sheet steel, with black plates as a specialty. The capital stock of the company was \$250,000, all of which was paid in, in cash, and which, according to their plans, was to be increased to double the amount by January 1, 1893. The works were at the time in course of construction at Hammond, Ind., which is just outside of the city limits of Chicago.

A building of brick and iron 300 by 160 feet, with cement and stone foundations, had the walls already up, and the roof trusses were then being placed in position.

The intention of the firm is to manufacture nothing but sheet steel of the best quality, using the basic open-hearth process.

The rolling mill, it was expected, would be in operation September 1, 1892. Two 1,200-horse power Corliss engines for driving the mills were built ready for shipment, and portions were already on the ground. This part of the machinery was built by a large foundry and machine works at Fort Wayne, Ind. A company at Youngstown, Ohio, were making all the roll trains and some of the shears. Other parts of the machinery were being made at Pittsburg, Pa., Cambridge City, Ind., Bay City, Mich., and in Chicago. The said rolling mills will employ 275 men. As soon as the rolling mills are in operation the company will erect their tinning works to manufacture bright tin plates on a large scale. The intention is to introduce the most improved machinery and methods in every part of the business.

The plans were all shown me, duly signed by the contractors, as was the contract itself. I was also shown correspondence from at least two of the manufacturing firms indicated, in which reference was made to considerable portions of the machinery already finished.

The site consists of 20 acres, which was purchased by the company for this special purpose. A track connecting with five trunk lines of railroads runs directly into the works. The Pittsburg, Fort Wayne and Chicago Railroad were then building a connecting track, a mile and a half in length, to take their share of the business, and a suburban station was to be established at this point.

The estimated output of the rolling mill when fully completed was from 75 to 100 tons every twenty-four hours, based on sheets 27 wire gauge.

On Monday, June 20, 1892, the American Tin Plate Company, of Elwood, Ind., started a new complete plant, which was in operation rolling the steel sheets and making bright plates on my arrival there June 22, 1892. There are three buildings, as follows:

	Feet.
The rolling mill (iron).....	130 by 176
The cold rolling mill (brick)	135 by 60
The tinning house (brick).....	170 by 50

The engine for the four hot mills (two stands of rolls each) is 1,000 horse power. The one for the cold rolls (four stands at present) is 600 horse power. Two of the hot mills were at work, and the other two were to be ready for work in a few days. The machinery of the cold rolls was running, and the rolls were being polished ready for use. The necessary heating and annealing furnaces were complete with the doubling and trimming shears. An automatic pickling machine was rapidly approaching completion.

These works were built new throughout for the sole purpose of rolling the black plates and of making bright tin and terne plates. The buildings are ample, and are made in the most substantial manner. The works are in the midst of the natural-gas section of Indiana.

A gas well put down by the company just outside the works, furnishes the fuel for the boilers and furnaces and for the tinning stacks.

In the tinning house, there are chimneys and places for ten stacks; five 5-roll Morewood tinning machines were in position, one of which was in operation, and the other four were being put in readiness to start immediately. -

The five additional stacks were to be put in as soon as practicable, one or more of which were to be the Norton's patent, by the automatic palm-oil process.

The plant when perfected, according to present plans, will have cost, as Col. A. L. Conger, the president of the company, informed me, about \$250,000.

As soon as this is in successful operation, the company are prepared to enlarge in every direction, and will make their own steel from the open-hearth furnace.

The men connected with this enterprise have abundant capital at their command, which they are prepared to invest to any required extent, as the business may warrant.

The estimated capacity of the present plant is from 11,000,000 to 12,000,000 pounds annually. The persons employed in the rolling mills and in the tinning house are principally Americans.

Elwood is rapidly becoming a manufacturing center, the chief attraction being the supply of natural gas. A number of those interested in the tin-plate works are also interested in one of the largest plate-glass works in the country, which is located at this point, and is in successful operation. These and other large manufacturing interests have grown up at Elwood during the past five years.

Marshall Bros. & Co., of Philadelphia, Pa., are in successful operation with two hot mills, two stands of rolls each, and three stands of cold rolls, together with the necessary annealing furnaces, machinery for tinning, etc. This firm are constantly adding improvements to their plant, and contemplate doubling their present rolling-mill capacity at an early day. A large bar mill rolls the bars from steel billets, which are obtained from iron and steel manufacturers in the vicinity of Pittsburgh and elsewhere. The bars after rolling are cut into the requisite lengths, and are then known as "tin-plate bars."

These works are located on the Delaware River, and cars from the Pennsylvania and the Reading railroads run directly into the works. A careful estimate made by the head of the firm, Mr. Alfred Marshall, at the time of my visit, June 10, 1892, placed the cost of that portion of their works which is devoted exclusively to the manufacture of tin and terne plates, at \$150,000. The total number of persons employed in their tin-plate manufactures will average about 150.

The United States Iron and Tin Plate Manufacturing Company, of Demmler, Pa., have enlarged their rolling mill, and otherwise are making additions to their plant.

The present plant consists of six stands of hot rolls and five of cold rolls, with the necessary appliances for pickling, annealing, and tinning. There is a bar mill for rolling the tin-plate bars from steel billets, and an improved squaring machine is provided. When there, June 24, 1892, a new pickling machine was being put in, which it was expected would be in operation in July following. The cost of that por-

tion of the buildings and plant, specially designed and used for tin-plate manufactures, was estimated by the president, Mr. Cronmeyer, at \$250,000.

The Blairsville Rolling Mill and Tin Plate Company, at Blairsville, Pa., which I visited June 27, 1892, expect to begin the work of actual manufacture not later than September 1, 1892, with a plant of very substantial character.

The buildings are one of brick and one of iron, the two covering an area of 120 by 140 feet. There are three stands of hot rolls, three of cold rolls, with automatic pickling machinery, and five tinning stacks. The boiler and engine have a capacity which will permit of enlarging the rolling-mill plant, as is intended. The firm have been delayed by various unforeseen causes in beginning the work of actual production as soon as was expected.

The Falcon Iron and Nail Company of Niles, Ohio, have let most of the contracts and are building the foundations for their new tin-plate works, which will include a complete rolling-mill plant for the manufacture of black plates.

About two years ago the Britton Rolling Mill Company, of which Mr. J. W. Britton is president, bought 11 acres of land, located on Hoyt avenue and the Lake Shore and Michigan Southern Railroad in Cleveland, Ohio, and later erected a rolling mill designed primarily for the manufacture of tin plates, although it is also rolling sheet and plate iron.

The main building of these works is of iron, 165 by 260 feet. Plans are fully matured for enlarging the present building, giving thereby the necessary space for one pickling house, 40 by 60, one annealing house, 54 by 84, and a tinning house, 48 by 130.

The engine for the tin-plate mill is 1,000 horse power, and was on the ground at the time of my visit, June 15, 1892, as were also the housings and bedplates for two tin-plate mills and two stands of cold rolls. For the latter there will be a separate engine of 400 horse power. According to present plans there will be four hot mills, two stands of rolls each, and four stands of cold rolls, with the necessary heating furnaces, doubling and trimming shears, annealing furnaces, pickling machines, etc. The bar mill, for rolling the tin-plate bars from steel billets, is already in operation.

Mr. Britton informed me that they would commence the erection of the enlarged works early in July, and he expects to have the four tin-plate mills and the tinning department all in operation before the close of the present year. He informed me, further, that the capital stock of the company is \$250,000, the largest part of which will be invested in their tin-plate operations.

The Cumberland Steel and Tin Plate Company, of Cumberland, Md., are erecting substantial works to consist of four hot mills, two stands of rolls each, and four stands of cold rolls; also a pickling machine, and other necessary appliances for the manufacture of black plates.

One building, that for the rolling mill, which is of steel, 60 by 100 feet, is now in process of erection, the object being to perfect the manufacture of black plates before engaging in tinning.

The engine will be 1,000 horse power. A portion of the machinery had already been contracted for June 3, 1892, when I visited Cumberland, where I had an interview with the president of the company, Mr. J. Wilson Humbird, of that place.

I subsequently met Mr. Dickey, of the firm of Hicks & Dickey, of Philadelphia, who have a large interest in these works. The imme-

diate investment in buildings and plant was estimated by Mr. Dickey at \$75,000, but the plans, when fully carried out, call for an outlay much in excess of that amount. It is expected that the works will be in operation in October, 1892.

The New Castle Steel and Tin Plate Company of New Castle, Pa., are building a complete new plant, and are pushing the work as fast as possible.

The foundations for machinery are nearly completed. The main building is all of steel and iron, and is 113 by 251 feet, and 24 feet high from floor line to under side of lower chord of truss. The roof is now going on to the roll, lathe, machine, and tool house, which is 40 feet 8 inches, by 70 feet, and 16 feet high, built of stone and brick, with slate roof.

The annealing, pickling, tinning, shipping, and office building is 60 feet 8 inches by 360 feet. Contracts are closed with the Garrison Foundry Company, of Pittsburg, for four hot mills, two stands of rolls each, and four stands of cold rolls; also for one 21-inch 3-high bar mill. When in Pittsburg, June 28, 1892, I called upon this firm, and was shown the plans for these mills, which they were then making. Two 700 horse power Corliss engines, with boilers, etc., have been contracted for with the Bass Foundry and Machine Works, of Fort Wayne, Ind. The tinning machinery, doubling and trimming shears, etc., is contracted for with the Lloyd Booth Company, of Youngstown, Ohio. The machinery is to be delivered in August and September, 1892.

The engines and buildings are arranged for two additional mills, which will be put in soon. The plant, which is being built for cash, will cost \$200,000. The firm hope to begin the actual work of manufacture by December 1, 1892, at the latest.

The firm of Wallace Banfield & Company, of Irondale, Ohio, have been most successfully engaged in the manufacture of black plates, which they have largely tinned themselves, and have also sold largely to other tin-plate manufacturers. Hitherto they have had in operation two hot mills, two stands of rolls each, and two stands of cold rolls.

The firm propose to double their present plant, by turning all their rolls into tin-plate mills, adding the necessary cold rolls. By these means they will have in operation by the end of the present year four hot mills, two stands rolls each, and four stands of cold rolls, with an annual output of over 10,000,000 pounds. There are six Morewood tinning stacks, with pickling machines, etc. The plant is supplied with a bar mill, which rolls the tin-plate bars from the billets.

The firm state that they have at present 225 persons employed in their tin-plate industry.

The firm of Merchant & Co., of Philadelphia, Pa., large importers and dealers in metals, etc., have found that their present building, which is a substantial structure of brick and iron, erected in part for the purpose, has proved entirely inadequate to supply the rapidly increasing demand for their plates, and they are now erecting another building which will double their present capacity. The firm use the Griffiths machine, which is a Welsh patent, and at the time of my visit there, June 9, 1892, I found one of these machines running steadily two turns; they were then further engaged in putting in four of these machines additional, all of which, it was expected, would be in readiness for work some time in the following month, July last.

The Norton Brothers, of Chicago, were pushing forward the work upon their plant at Maywood on the occasion of my visit there, June 16, 1892. The tinning house, which is a substantial wooden structure,

with stone and cement foundations, is 36 by 270 feet, and was finished with the necessary space for thirty tinning machines, which the firm propose to put in as fast as they can be made in their machine shops. These machines are of the firm's own invention, and are covered by patent, being known as "Norton's automatic palm-oil tinning machine." I was informed by one of the Norton Brothers that these machines have a capacity of 70 boxes per day of ten hours, either 14 by 20 or 20 by 28 I. C. plates. This is an output much in excess of any machine of which I have knowledge.

At the time of my visit the firm had just booked an order from the Fairwood Tin Plate Works, at Gowerton, near Swansea, Wales, for two of these machines. The order was placed by the managing partner of the works after personal observation of the practical working of the machine at Maywood. The manager declared that the invention of this machine had solved the problem of making a perfect tin plate, automatically, with palm oil instead of acid flux, and without skilled labor. The palm-oil process is regarded as superior to all others in tin-plate manufactures, for the reason, as is claimed, that it produces a more durable plate.

The firm had also devised a machine, the essential features of which were in operation at Maywood, for quickening and cheapening the process of cleaning the sheets after tinning. By this means it is expected that one person can do what has hitherto required the labor of three or four persons, and the work will be done better than by the old hand-cleaning process.

The firm propose, ultimately, to erect their rolling mills for the production of black plates, but are now working upon an invention by which they hope to cheapen the rolling process by the manufacture of the sheets direct from the fluid steel. They have erected a complete plant, including a 6-ton open-hearth Siemens-Martin furnace for steel making, with which to carry on their experimental work, all at an expense of more than \$100,000.

The firm have ample capital and expect to make an additional outlay of \$250,000 to \$300,000 in completing their plant.

The estimated capacity of their mills when completed is from 40,000,000 to 50,000,000 pounds annually.

As to the quality of American tin and terne plates it may be stated that it is equal if not superior to that of foreign plates of the same kinds, which is evidenced by the fact that they are eagerly sought after by consumers, and that manufacturers are generally behind with their orders.

A principal representative of one of the large stamping companies of the country, which has used extensively both the American and foreign product, said to me that, from their experience, plates made from American soft Bessemer steel, stood the test of deep stamping equally well with the best English open-hearth steel.

I might enlarge, but what has been stated will serve to show the rapid strides of the new industry under the operations of the present law. It furnishes, further, substantial grounds for belief that the time is not far distant when the United States will be the largest producer, as it is now the largest consumer, of tin plates, of any nation in the world.

I append, Exhibit 7, a revised list of manufacturers, from which I have omitted the names of all firms or companies, who had not begun actual building operations, August 15, 1892.

TIN MINES.

With respect to the production of what is known as the Temescal tin mine, located in San Bernardino County, Cal., I have before me the sworn statement, dated July 29, 1892, of W. W. Stewart, of the firm of W. W. Stewart & Co., at San Diego, Cal., selling agents of the mine.

From this statement it appears that the first shipment received by the firm from the mine was—

	Pounds.
June 1, 1891.....	11, 826
Shipments from July 1, 1891, to December 31, 1891.....	109, 282
Shipments from January 1, 1892, to June 30, 1892.....	161, 530
Total production past fiscal year.....	270, 812
Previous production	11, 826
Aggregate production.....	282, 638
Or over 141 tons of pig tin.	

Mr. Stewart states that the mine looks as well as it ever did, notwithstanding reports to the contrary that have been lately circulated. It appears that 110 miners are now employed, and that the stamping facilities have recently been enlarged. It will probably require from three to five years to get the mines opened so as to work them properly. The tin is pronounced by competent experts to be of a fine quality, comparing favorably with the best grades used in Wales, in the manufacture of tin plates.

From an interview had recently with the representative of the Harney Peak Tin Mining, Milling and Manufacturing Company, whose office is at No. 42 Wall street, this city, it appears that the development of these mines has been steadily going forward, and that the expectation is soon to begin the work of crushing and concentration.

This work has been unexpectedly delayed by the heavy snows in that section, which remained on the ground until late in the season, and prevented the building by the railroad of the connecting tracks to the various mines. The expenditure during the past year in the sinking of shafts, the running of levels, and other operations, required in the opening up of the mines, has averaged about \$35,000 monthly. The mill for crushing and concentrating the ore is at Hill City, which is the center of operations. The mill is built with a present capacity of 250 tons, but with power for 500 tons. The future of these mines, as far as can be determined, is very promising.

Respectfully submitted.

IRA AYER,
Special Agent.

Hon. CHARLES FOSTER,
Secretary of the Treasury, Washington, D. C.

EXHIBIT 1.

Abstract of tin plates and terne plates produced in the United States during the quarter ended September 30, 1891.

[Date from July 1 to September 30, 1891.]

Name of manufacturer.	Voucher number.	Tin plates.				Terne plates.			
		Lighter than 50 pounds per 100 square feet.	50 pounds per 100 square feet.	62½ pounds per 100 square feet.	63 pounds per 100 square feet and heavier.	Lighter than 50 pounds per 100 square feet.	50 pounds per 100 square feet.	62½ pounds per 100 square feet.	63 pounds per 100 square feet and heavier.
		Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.
Marshall, Bros. & Co., Philadelphia, Pa.	1	.....	.....	.....	.....	.....	4,330	16,025	24,955
N. & G. Taylor & Co., Philadelphia, Pa.	2	.....	.....	.....	.....	.....	40,747	.....	628
Pittsburg Electro Plating Co., Apollo, Pa.	3	.....	.....	.....	.....	.....	349,000	.....	206,298
St. Louis Stamping Co., St. Louis, Mo.	4	.....	10,213	3,233	6,546	.....	25,650	.....	.....
U. S. Iron and Tin Plate Manufacturing Co., Demmler, Pa.	5	5,010	74,961	41,452	11,074	.....	6,800	.....	.....
Total	.....	5,010	85,174	44,685	17,620	.....	426,527	16,025	231,881

EXHIBIT 2.

Abstract of tin plates and terne plates produced in the United States during the quarter ended December 31, 1891.

[Date from October 1 to December 31, 1891.]

Name of manufacturer.	Voucher number.	Tin plates.				Terne plates.			
		Lighter than 50 pounds per 100 square feet.	50 pounds per 100 square feet.	62½ pounds per 100 square feet.	63 pounds per 100 square feet and heavier.	Lighter than 50 pounds per 100 square feet.	50 pounds per 100 square feet.	62½ pounds per 100 square feet.	63 pounds per 100 square feet and heavier.
		Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.
Anderson Tin Plate Co., Anderson, Ind.	1	.....	.....	.....	.....	.....	25,495	.....	.....
Apollo Iron and Steel Co., Apollo, Pa.	2	.....	.....	.....	.....	30,881	.....	.....	.....
Cleveland Tin Plate Co., Cleveland, Ohio.	3	.....	46,870	.....	.....	.....	13,200	.....	.....
Fleming & Hamilton, Pittsburg, Pa.	4	.....	.....	.....	.....	77,406	.....	147,521	.....
Marshall Bros. & Co., Philadelphia, Pa.	5	.....	.....	.....	.....	.....	225,936	30,965	2,240
N. & G. Taylor & Co., Philadelphia, Pa.	6	.....	1,404	2,176	.....	.....	78,102	143,602	.....
P. H. Laufman & Co., limited, Apollo, Pa.	7	.....	.....	.....	.....	.....	28,209	.....	68,041
Pittsburg Electroplating Co., Apollo, Pa.	8	.....	.....	.....	.....	.....	186,000	.....	69,250
St. Louis Stamping Co., St. Louis, Mo.	9	.....	39,976	7,101	.....	.....	16,408	.....	.....
U. S. Iron and Tin Plate Manufacturing Co., Demmler, Pa.	10	.....	34,884	49,090	34,410	.....	26,894	16,260	.....
William T. Simpson & Co., Cincinnati, Ohio	11	.....	.....	.....	.....	.....	.....	.....	7,500
Total	.....	.....	123,134	58,367	34,410	108,287	600,244	338,348	147,031

EXHIBIT 3.

Abstract of tin plates and terne plates produced in the United States during the quarter ended March 31, 1892.

[Date from January 1 to March 31, 1892.]

Name of manufacturer.	Voucher number.	Tin plates.				Terne plates.			
		Lighter than 50 pounds per 100 square feet.	50 pounds per 100 square feet.	62½ pounds per 100 square feet.	63 pounds per 100 square feet and heavier.	Lighter than 50 pounds per 100 square feet.	50 pounds per 100 square feet.	62½ pounds per 100 square feet.	63 pounds per 100 square feet and heavier.
		Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.
American Tin and Terne Plate Co., Philadelphia, Pa.....	1	.....	.....	.....	.....	.....	227, 237	.....	.....
Anderson Tin Plate Co., Anderson Ind.....	2	.....	94, 368	.....	.....	.....	52, 416	.....	.....
Apollo Iron and Steel Co., Apollo, Pa.....	3	.....	.....	.....	.....	182, 005	.....	23, 133	.....
Columbia Tin Plate Co., Piqua, Ohio.....	4	.....	68, 920	.....	17, 500	.....	2, 750	.....	2, 800
Cleveland Tin Plate Co., Cleveland, Ohio.....	5	.....	49, 788	43, 335	6, 560	.....	110, 766	675	.....
Griffiths & Cadwalader, Pittsburgh, Pa.....	6	.....	.....	.....	.....	80, 438	.....	32, 230	.....
Jas. B. Scott & Co., Pittsburgh, Pa.....	7	.....	.....	.....	.....	.....	.....	.....	2, 240
John Hamilton, Pittsburgh, Pa.....	8	.....	.....	.....	.....	144, 505	.....	99, 388	.....
McKinley Tin Plate Co., Pittsburgh, Pa.....	9	.....	.....	.....	.....	.....	.....	.....	33, 600
Norton Bros., Chicago, Ill.....	10	90, 651	.....	.....	.....	.....	.....	.....	.....
N. & G. Taylor Co., Philadelphia, Pa.....	11	29, 408	1, 473	38, 339	5, 425	.....	305, 034	46, 711	8, 437
P. H. Laufman & Co., limited, Apollo, Pa.....	12	.....	.....	.....	.....	.....	45, 749	.....	125, 278
Pittsburg Electroplating Co., Apollo, Pa.....	13	.....	.....	.....	.....	.....	98, 000	.....	.....
Pittsburg Tin Plate Works, New Kensington, Pa.....	14	.....	.....	.....	.....	.....	55, 590	.....	28, 350
Record Manufacturing Co., Conneaut, Ohio.....	15	.....	117, 493	.....	.....	.....	.....	.....	.....
The St. Louis Stamping Co., St. Louis, Mo.....	16	18, 726	334, 805	61, 447	51, 473	.....	255, 433	26, 927	.....
The Cincinnati Corrugating Co., Piqua, Ohio.....	17	.....	.....	.....	.....	.....	16, 280	.....	.....
U. S. Iron and Tin Plate Manufacturing Co., Denamler, Pa.....	18	.....	21, 175	12, 266	.....	.....	49, 222	37, 045	.....
Wallace Banfield & Co., limited, Irondale, Pa.....	19	.....	31, 104	5, 400	.....	.....	16, 200	135	.....
William T. Simpson & Co., Cincinnati, Ohio.....	20	.....	.....	.....	.....	.....	.....	.....	995
Total.....	.....	138, 785	719, 126	160, 787	80, 958	406, 948	1, 234, 677	266, 244	201, 700

EXHIBIT 4.

Abstract of tin plates and terne plates produced in the United States during the quarter ended June 30, 1892.

[Date, from April 1 to June 30, 1892.]

Name of manufacturer.	Voucher number.	Tin plates.				Terne plates.			
		Lighter than 50 pounds per 100 square feet.	50 pounds per 100 square feet.	62½ pounds per 100 square feet.	63 pounds per 100 square feet and heavier.	Lighter than 50 pounds per 100 square feet.	50 pounds per 100 square feet.	62½ pounds per 100 square feet.	63 pounds per 100 square feet and heavier.
		Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.	Lbs. net.
A. A. Thomson & Co., New York, N. Y.	1							24, 805	
American Tin and Terne Plate Co., Philadelphia, Pa.	2						264, 000		
American Tin Plate Co., Elwood, Ind.	3		27, 540				1, 897	27, 160	
Anderson Tin Plate Co., Anderson, Ind.	4				83, 876			25, 796	51, 744
Apollo Iron and Steel Co., Apollo, Pa.	5					938, 929		81, 857	
Cincinnati Corrugating Co., Piqua, Ohio	6						90, 372		
Cleveland Tin Plate Co., Cleveland, Ohio	7		56, 871	79, 380	36, 718		17, 822		
Coates & Co., Baltimore, Md.	8		136, 000	13, 030	6, 230				
Columbia Tin Plate Co., Piqua, Ohio	9		62, 100				145, 600		
Griffiths & Cadwalader, Pittsburg, Pa.	10					43, 000			
John Hamilton, Pittsburg, Pa.	11					98, 015		132, 352	
Kahn Brothers, New York, N. Y.	12						138, 240		
Keystone Tin Plate Co., Philadelphia, Pa.	13						64, 800		
Marshall Brothers & Co., Philadelphia, Pa.	14		114, 224	13, 776	1, 544		160, 765		45, 061
Matthai Ingram & Co., Baltimore, Md.	15		63, 502	74, 498	41, 125				
Merchant & Co., Philadelphia, Pa.	16					445, 006	77, 270	44, 685	21, 016
McKinley Tin Plate Co., Wilkinsburg, Pa.	17						48, 000		
Norton Bros., Chicago, Ill.	18	110, 431		29, 673					
P. H. Laufman & Co., limited, Apollo, Pa.	19						109, 284		151, 280
Pittsburg Electroplating Co., Apollo, Pa.	20						120, 540		
Pittsburg Tin Plate Works, New Kensington, Pa.	21							224, 000	13, 500
Record Manufacturing Co., Conneaut, Ohio	22		168, 439	189, 661					
Scott & Co., James B., Pittsburg, Pa.	23						1, 610		51, 380
St. Louis Stamping Co., St. Louis, Mo.	24	135, 498	832, 703	102, 155	58, 841		686, 770	149, 503	
U. S. Iron and Tin Plate Manufacturing Co., Demmer, Pa.	25		143, 400	59, 946	19, 491		249, 843	58, 633	
Wallace Bantfield & Co., limited, Irondale, Ohio	26	5, 720	222, 064	156, 330	26, 968		304, 972	19, 710	
Total		251, 649	1, 826, 843	718, 449	274, 593	1, 524, 950	2, 481, 785	788, 501	333, 981

EXHIBIT 5.

Statement of tin plates and terne plates produced in the United States during the fiscal year ended June 30, 1892.

Production during quarter ended—	Tin plates.				Terne plates.			
	Lighter than 50 pounds per 100 square feet.	50 pounds per 100 square feet.	62½ pounds per 100 square feet.	63 pounds per 100 square feet and heavier.	Lighter than 50 pounds per 100 square feet.	50 pounds per 100 square feet.	62½ pounds per 100 square feet.	63 pounds per 100 square feet and heavier.
	<i>Lbs. net.</i>	<i>Lbs. net.</i>	<i>Lbs. net.</i>	<i>Lbs. net.</i>	<i>Lbs. net.</i>	<i>Lbs. net.</i>	<i>Lbs. net.</i>	<i>Lbs. net.</i>
September 30, 1891 (Exhibit 1).....	5, 010	85, 174	44, 685	17, 620	.....	426, 527	16, 025	231, 881
December 31, 1891 (Exhibit 2).....	.....	123, 134	58, 367	34, 410	108, 287	600, 244	338, 348	147, 031
March 31, 1892 (Exhibit 3).....	138, 785	719, 126	160, 787	80, 958	406, 948	1, 234, 677	266, 244	201, 700
June 30, 1892 (Exhibit 4).....	251, 649	1, 826, 843	718, 449	274, 593	1, 524, 950	2, 481, 785	788, 501	333, 981
Total	395, 444	2, 754, 277	982, 288	407, 581	2, 040, 185	4, 743, 233	1, 409, 118	914, 593

EXHIBIT 6.

SUMMARY OF PRODUCTION.

Period from July 1, 1891, to June 30, 1892.	Tin plates.			Terne plates.			Tin and terne plates.
	Lighter than 63 pounds per 100 square feet.	63 pounds per 100 square feet and heavier.	Total.	Lighter than 63 pounds per 100 square feet.	63 pounds per 100 square feet and heavier.	Total.	Aggregate production.
	<i>Lbs. net.</i>	<i>Lbs. net.</i>	<i>Lbs. net.</i>	<i>Lbs. net.</i>	<i>Lbs. net.</i>	<i>Lbs. net.</i>	<i>Lbs. net.</i>
Exhibit 1.....	134, 869	17, 620	152, 489	442, 552	231, 881	674, 433	826, 922
Exhibit 2.....	181, 501	34, 410	215, 911	1, 046, 879	147, 031	1, 193, 910	1, 409, 821
Exhibit 3.....	1, 018, 698	80, 958	1, 099, 656	1, 907, 869	201, 700	2, 109, 569	3, 209, 225
Exhibit 4.....	2, 796, 941	274, 593	3, 071, 534	4, 795, 236	333, 981	5, 129, 217	8, 200, 751
Total.....	4, 132, 009	407, 581	4, 539, 590	8, 192, 536	914, 593	9, 107, 129	13, 646, 719

EXHIBIT 7.

REVISED LIST OF FIRMS OR COMPANIES ENGAGED IN TIN AND TERNE PLATE MANUFACTURES, AUGUST 15, 1892.

[a. Producing. b. Building. c. Enlarging. s. Production suspended. 1. Making or preparing to make black plates.]

NOTE.—From the following list are omitted the names of all firms or companies who had not begun actual building operations, August 15, 1892.

A. A. Thomson & Co., a.....	New York, N. Y.
Aliquippa Tin Plate Company, b.....	Aliquippa, Pa.
American Stamping Company, b.....	Brooklyn, N. Y.
American Tin Plate Company, a e 1.....	Elwood, Ind.
American Tin Plate Machine and Manufacturing Company, a.....	Philadelphia, Pa.
American Tin and Terne Plate Company, a.....	Philadelphia, Pa.
Anderson Tin Plate Company, s.....	Anderson, Ind.
Apollo Iron and Steel Company, a 1.....	Apollo, Pa.
Britton Rolling Mill Company, b 1.....	Cleveland, Ohio.
Blairsville Rolling Mill and Tin Plate Company, b 1.....	Blairsville, Pa.
Cincinnati Corrugating Company, a.....	Piqua, Ohio.
Cleveland Tin Plate Company, a.....	Cleveland, Ohio.
Coates & Co., a 1.....	Baltimore, Md.
Columbia Tin Plate Company, a.....	Piqua, Ohio.
Corning Steel Company, b 1.....	Chicago, Ill.
Cumberland Rolling Mill and Tin Plate Company, b 1.....	Cumberland, Md.
E. Morewood & Co., b 1.....	Gas City, Ind.
Falcon Iron and Nail Company, b 1.....	Niles, Ohio.
Griffiths & Cadwalader, a.....	Pittsburg, Pa.
Gumme, Sperring & Co., a.....	Philadelphia, Pa.
Hughes & Patterson, b 1.....	Philadelphia, Pa.
John Hamilton, a.....	Pittsburg, Pa.
Kahn Brothers, a.....	New York, N. Y.
Keystone Tin Plate Company, s.....	Philadelphia, Pa.
Marshall Bros. & Co., a e 1.....	Philadelphia, Pa.
Matthai Ingram & Co., a.....	Baltimore, Md.
McKinley Tin Plate Company, a.....	Wilkinsburg, Pa.
Merchant & Co., a e.....	Philadelphia, Pa.
Morewood Tin Plate Manufacturing Company, b.....	Elizabethport, N. J.
N. & G. Taylor Company, b.....	Philadelphia, Pa.
Norton Brothers, a e 1.....	Chicago, Ill.
New Castle Tin Plate Company, b 1.....	New Castle, Pa.
P. H. Laufman & Co., limited, a e 1.....	Apollo, Pa.
Pittsburg Electro-Plating Company, a e.....	Apollo, Pa.
Pittsburg Tin Plate Works, b.....	New Kensington, Pa.
Record Manufacturing Company, a e.....	Conneaut, Ohio.
Scott & Co., Jas. B., a.....	Pittsburg, Pa.
St. Louis Stamping Company, a e 1.....	St. Louis, Mo.
Somerton Tin Plate Works, b 1.....	Brooklyn, N. Y.
United States Iron and Tin Plate Manufacturing Company, a e 1.....	Demmler, Pa.
Wallace Banfield & Co., limited, a e 1.....	Irondale, Ohio.
W. H. Edwards, a.....	Norristown, Pa.
Total number of companies August 15, 1892.....	42
Number of companies manufacturing August 15, 1892.....	26
Number of companies building August 15, 1892.....	14
Number of companies production suspended August 15, 1892.....	2
Number of companies enlarging works August 15, 1892.....	10
Number of companies making or preparing to make black plates, August 15, 1892.....	18
Production, tin and terne plates, fiscal year ended June 30, 1892.. pounds..	13, 646, 719
Total production fiscal year ended June 30, 1892, including manufactures from American sheet iron or steel, tinned or terne-coated, about..... pounds..	20, 000, 000
Estimated production tin and terne plates fiscal year ending June 30, 1893..... pounds..	100, 000, 000
Estimated annual rate of production, close of fiscal year ending June 30, 1893..... pounds..	200, 000, 000
Estimated investment, buildings and plant, close of fiscal year ending June 30, 1893.....	\$5, 000, 000

STAMPING COMPANIES.

The following is a list of stamping companies who use American sheet iron or steel in the manufacture of articles and wares, tinned or terne-coated, and returns from which had been received August 15, 1892. Other firms are engaged in these manufactures, from whom returns are expected. It has been seen that the class of manufactures above described constitutes tin and terne plates within the meaning of the law.

American Stamping Company	Brooklyn, N. Y.
Central Stamping Company	New York, N. Y.
Chicago Stamping Company	Chicago, Ill.
Eberhard Manufacturing Company	Cleveland, Ohio.
G. I. Mix & Co.	Yalesville, Conn.
Ironclad Manufacturing Company.....	New York, N. Y.
Joseph Scheider & Co.,	Brooklyn, N. Y.
Knapp & Pratt Manufacturing Company.....	Geneva, Ohio.
R. Wallace & Sons Manufacturing Company.....	Wallingford, Conn.
Sidney Shepard & Co.....	Buffalo, N. Y.

Number of companies, returns rendered August 15, 1892.....	10
Total manufactures fiscal year ended June 30, 1892, per returns rendered	
to August 15, 1892.....	pounds.. 4, 828, 228

ROLLING MILLS.

The following rolling mills, which are not engaged in the manufacture of tin and terne plates, make the black plates, which they sell to manufacturers of tin and terne plates, and to stamping companies for tinning purposes, viz:

Cannonsburg Iron and Steel Company.....	Cannonsburg, Pa.
Jennings Brothers.....	Allegheny, Pa.
Kirkpatrick & Co.....	Pittsburg, Pa.
Summers Brothers.....	Struthers, Ohio.

The Cannonsburg Iron and Steel Company have recently enlarged their plant for the manufacture of black plates.

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